



UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/678,318 10/03/00 STEARNS

W TI-25833.1

023494 MMC2/0621
TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS TX 75265

EXAMINER

BROCK II, P

ART UNIT

PAPER NUMBER

2815

DATE MAILED:

06/21/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/678,318

Applicant(s)

STEARNS ET AL.

Examiner

Paul E Brock II

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 19-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-8 and 20-27 is/are rejected.
- 7) ☒ Claim(s) 19 and 28 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/250,641.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1 – 2 and 20 – 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Chiu et al. (USPAT 6121678, Chiu).

Chiu discloses in figure 6 a method of laying out traces for connection of bond pads of a semiconductor chip to a ball grid array disposed on a substrate.

With regard to claim 1, Chiu discloses in figure 6 and column 5, lines 47 – 49 providing a substrate 42 having a surface with a plurality of rows and columns of ball pads and having a solder ball secured to each of the ball pads. Chiu discloses in figure 6 providing a plurality of pairs of traces on the surface, each trace of each of the pairs of traces extending to a different one of the ball pads and extending to ball pads on a plurality of the rows and columns, each trace of each of the pair of traces being spaced from the other trace of the pair by up to a ball pitch, being maximized for identity in length and having up to one ball pitch difference in length and being maximized for parallelism and spacing.

With regard to claim 2, it is inherent in the method of Chiu that each of the traces of the pair is further maximized for identity in cross-sectional geometry.

With regards to claims 20 and 21, Chiu inherently discloses that the substrate is a printed wiring board substrate.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 – 4 and 22 – 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu.

With regard to claims 3 – 4, Chiu does not disclose applying a differential signal pair to at least one of the pair of traces. Applying differential signal pairs is well known in the art. It would have been obvious to one of ordinary skill in the art at the time of the present invention to apply a differential signal pair to at least one of the pair of traces in order to have a lower output voltage from the pair as is well known in the art.

With regards to claims 22 – 23, Chiu inherently discloses that the substrate is a printed wiring board substrate.

5. Claims 5 – 8 and 24 – 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu as applied to claims 1 – 4, respectively, above, and further in view of Karnezos (USPAT 5409865, Karnezos).

With regard to claims 5 – 8, Chiu does not disclose including a step of providing a further surface insulated from the surface with some of the traces being on the further surface. Karnezos teaches in the abstract section a step of providing a further surface insulated from a surface of a substrate, a plurality of traces are disposed on the further surface. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the insulated further surface of Karnezos in the method of Chiu in order to provide a generally flexible dielectric film bearing a pattern of conductive traces as stated by Karnezos in the abstract.

With regards to claims 24 – 27, Chiu inherently discloses that the substrate is a printed wiring board substrate.

Response to Arguments

6. Applicant's arguments filed 5/16/01 have been fully considered but they are not persuasive. Applicant's arguments regarding "each trace of each of said pair of traces being spaced from the other trace of the pair by up to a ball pitch, being maximized for identity in length and having up to one ball pitch difference in length and being maximized for parallelism and spacing... While the Examiner has stated that such features are set forth in Chiu et al. at column 5, lines 47 to 49, a reading of such section will immediately indicate that no such features are taught or even suggested therein." The examiner would like to point out that the teaching for "each trace of each of said pair of traces being spaced from the other trace of the pair by up to a ball pitch, being maximized for identity in length and having up to one ball pitch

difference in length and being maximized for parallelism and spacing." has been stated to be taught in figure 6 of Chiu.

Allowable Subject Matter

7. Claims 19 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, either singularly or in combination, does not disclose or suggest at least the step of a third pair of traces extending to ball pads in a third row of a second and third columns and disposed in parallel between the second and third columns wherein there are no other leads disposed between the second and third columns.

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Q. (SP6)
6/21/01

Application/Control Number: 09/678,318
Art Unit: 2815

Page 6

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II
June 20, 2001



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800